



STATE OF WASHINGTON

## STATE BUILDING CODE COUNCIL

### Washington State Energy Code Development Standard Energy Code Proposal Form

Log No. **091**

**TAG Revised 7/16/21**

Code being amended: ☒ Commercial Provisions ☐ Residential Provisions

Code Section # C402.5.2 and C402.5.3

#### Brief Description:

Reduce the generous grace zone for not meeting minimum code compliance from 0.40 down to 0.30, align the Washington exception with the test value maximum that was in the 2015 Seattle amendments, and add language clarity from the 2018 Washington code that is not in the 2021 integrated draft. Include the C402.5.3 exception in the newly added 2021 IECC C402.5.2 section so that the two sections have the same exception, consistency, and stringency.

**Proposed code change text:** (Copy the existing text from the Integrated Draft, linked above, and then use underline for new text and ~~strikeout~~ for text to be deleted.)

**C402.5.2 Enclosure testing for dwelling and sleeping unit accessed directly from the outdoors.** For dwelling units accessed directly from outdoors, the building thermal envelope shall be tested in accordance with ASTM E779, ANSI/RESNET/ICC 380, ASTM E1827 or an equivalent method approved by the code official. The measured air leakage shall not exceed 0.25 cfm/ft<sup>2</sup> (1.27 L/s m<sup>2</sup>) of the testing unit enclosure area at a pressure differential of 0.2 inch water gauge (50 Pa). Where multiple dwelling units or sleeping units or other occupiable conditioned spaces are contained within one building thermal envelope and are accessed directly from the outdoors, each unit shall be considered an individual testing unit, and the building air leakage shall be the weighted average of all testing unit results, weighted by each testing unit's enclosure area. Units shall be tested separately with an unguarded blower door test as follows:

1. Where buildings have fewer than eight testing units, each testing unit shall be tested.
2. For buildings with eight or more testing units, the greater of seven units or 20 percent of the testing units in the building shall be tested, including a top floor unit, a ground floor unit, and a unit with the largest testing unit enclosure area. For each tested unit that exceeds the maximum air leakage rate, an additional two units shall be tested, including a mixture of testing unit types and locations.

**3. Test shall be accomplished using either (1) both pressurization and depressurization or (2) pressurization alone, but not depressurization alone. The test results shall be plotted against the correct P for pressurization in accordance with Section 9.4 of ASTM E779.**

Where the measured air leakage rate exceeds 0.25 cfm/ft<sup>2</sup> (2.0 L/s × m<sup>2</sup>) corrective action shall be taken to seal leaks in the air barrier. Post-corrective action testing and repeated corrective actions measures will be taken until the required air leakage rating is achieved. Final passing air leakage test results shall be submitted to the code official.

3.4.

~~Exception: Where the measured air leakage rate exceeds 0.25 cfm/ft<sup>2</sup> (2.0 L/s × m<sup>2</sup>) but does not exceed 0.30 cfm/ft<sup>2</sup> (3.0 L/s × m<sup>2</sup>), a diagnostic evaluation using smoke tracer or infrared imaging shall be conducted while the building is pressurized along with a visual inspection of the air barrier. Any leaks noted shall be sealed where such sealing can be made without destruction of existing building components. An additional report identifying the corrective actions taken to seal leaks shall be submitted to the code official and the building owner and shall be deemed to comply with~~

~~the requirements of this section. If the tested rate exceeds 0.30 cfm/ft<sup>2</sup>, corrective actions must be made, and the test completed again. A test above 0.30 cfm/ft<sup>2</sup> will not be accepted.~~

**C402.5.3 Building thermal envelope testing.** The building thermal envelope shall be tested in accordance with ASTM E779, ANSI/RESNET/ICC 380, ASTM E3158 or ASTM E1827 or an equivalent method approved by the code official. The measured air leakage shall not exceed 0.25 cfm/ft<sup>2</sup> (1.27 L/s × m<sup>2</sup>) of the building thermal envelope area at a pressure differential of 0.3 inch water gauge (75 Pa). Alternatively, portions of the building shall be tested, and the measured air leakages shall be area weighted by the surface areas of the building envelope in each portion. The weighted average test results shall not exceed the whole building leakage limit. In the alternative approach, the following portions of the building shall be tested:

1. The entire envelope area of all stories that have any spaces directly under a roof.
2. The entire envelope area of all stories that have a building entrance, exposed floor, or loading dock, or are below grade.
3. Representative above-grade sections of the building totaling at least 25 percent of the wall area enclosing the remaining conditioned space.
- 4. Test shall be accomplished using either (1) both pressurization and depressurization or (2) pressurization alone, but not depressurization alone. The test results shall be plotted against the correct P for pressurization in accordance with Section 9.4 of ASTM E779.**

~~Where the measured air leakage rate exceeds 0.25 cfm/ft<sup>2</sup> (2.0 L/s × m<sup>2</sup>) corrective action shall be taken to seal leaks in the air barrier. Post-corrective action testing and repeated corrective actions measures will be taken until the required air leakage rating is achieved. Final passing air leakage test results shall be submitted to the code official.~~

~~Exception: Where the measured air leakage rate exceeds 0.25 cfm/ft<sup>2</sup> (2.0 L/s × m<sup>2</sup>) but does not exceed **0.40 0.30** cfm/ft<sup>2</sup> (3.0 L/s × m<sup>2</sup>), a diagnostic evaluation using smoke tracer or infrared imaging shall be conducted while the building is pressurized along with a visual inspection of the air barrier. Any leaks noted shall be sealed where such sealing can be made without destruction of existing building components. An additional report identifying the corrective actions taken to seal leaks shall be submitted to the code official and the building owner and shall be deemed to comply with the requirements of this section. **If the tested rate exceeds 0.30 cfm/ft<sup>2</sup>, corrective actions must be made, and the test completed again. A test above 0.30 cfm/ft<sup>2</sup> will not be accepted.**~~

#### **Purpose of code change:**

The State Building Code Council approved adding a grace zone to the 2018 code that exceeds the code requirement by 60%. This proposal reduces the grace zone to 20% above the code requirement.

**Your amendment must meet one of the following criteria. Select at least one:**

- |  |   |
|--|---|
| <input type="checkbox"/> Addresses a critical life/safety need.  | <input type="checkbox"/> Consistency with state or federal regulations. |
| <input type="checkbox"/> The amendment clarifies the intent or application of the code.  | <input type="checkbox"/> Addresses a unique character of the state.     |
| <input checked="" type="checkbox"/> Addresses a specific state policy or statute.<br>(Note that energy conservation is a state policy) | <input type="checkbox"/> Corrects errors and omissions.                 |

**Check the building types that would be impacted by your code change:**

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Single family/duplex/townhome | <input checked="" type="checkbox"/> Multi-family 4 + stories | <input checked="" type="checkbox"/> Institutional |
| <input type="checkbox"/> Multi-family 1 – 3 stories    | <input checked="" type="checkbox"/> Commercial / Retail      | <input checked="" type="checkbox"/> Industrial    |

|                   |   |
|-------------------|---|
| Your name         | Michael Fowler, AIA                       |
| Your organization | Passive House NorthwestOther contact name |
| Email address     | energycodewa@gmail.com                    |
| Phone number      | 360-747-7469                              |

## **Economic Impact Data Sheet**

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants and businesses.

Reducing the excess heat loss due to air leakage will deliver energy savings.

Provide your best estimate of the construction cost (or cost savings) of your code change proposal? (See OFM Life Cycle Cost [Analysis tool](#) and [Instructions](#); use these [Inputs](#). **Webinars on the tool can be found [Here](#) and [Here](#)**)

\$[Click here to enter text.](#)/square foot (For residential projects, also provide \$[Click here to enter text.](#)/ dwelling unit)

Show calculations here, and list sources for costs/savings, or attach backup data pages

No change in construction cost.

Provide your best estimate of the annual energy savings (or additional energy use) for your code change proposal?

[Click here to enter text.](#)KWH/ square foot (or) [Click here to enter text.](#)KBTU/ square foot

(For residential projects, also provide [Click here to enter text.](#)KWH/KBTU / dwelling unit)

Show calculations here, and list sources for energy savings estimates, or attach backup data pages

Based on 2018 proposal energy model estimates on 4-story and 10-story multifamily prototypes when coupled with now code minimum heat recovery ventilation, tightening this grace zone will approximately reduce annual heating demand 29%, peak heating load 23%, and building energy use 11%.

List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:

No change in code enforcement time.